

(12) **United States Patent**  
**Kuo et al.**

(10) **Patent No.:** **US 9,636,513 B2**  
(45) **Date of Patent:** **May 2, 2017**

(54) **DEFIBRILLATOR DEVICE**

(71) Applicant: **Winbond Electronics Corp.**, Taichung (TW)

(72) Inventors: **Ming-Ying Kuo**, Hsinchu (TW);  
**Ming-Dou Ker**, Hsinchu County (TW)

(73) Assignee: **Winbond Electronics Corp.**, Taichung (TW)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/601,830**

(22) Filed: **Jan. 21, 2015**

(65) **Prior Publication Data**

US 2016/0206894 A1 Jul. 21, 2016

(51) **Int. Cl.**  
**A61N 1/39** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **A61N 1/3981** (2013.01); **A61N 1/39** (2013.01); **A61N 1/3968** (2013.01); **A61N 1/3987** (2013.01)

(58) **Field of Classification Search**  
CPC ..... A61N 1/39; A61N 1/3993; A61N 1/3968  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

8,086,320 B2 12/2011 Saketkhau  
8,594,784 B2 11/2013 Schwibner et al.  
2003/0088275 A1\* 5/2003 Palmer ..... A61B 5/04  
607/5

2010/0318145 A1 12/2010 Chapman et al.  
2013/0304147 A1 11/2013 Aoyama et al.  
2014/0039594 A1 2/2014 Savage et al.  
2014/0222096 A1 8/2014 Hu et al.

#### FOREIGN PATENT DOCUMENTS

JP 2002-360711 12/2002  
TW M465735 U 11/2013

#### OTHER PUBLICATIONS

JP Office Action dated Jan. 26, 2016 from corresponding JP Appl, 5 pp.

\* cited by examiner

*Primary Examiner* — Joseph Dietrich

(74) *Attorney, Agent, or Firm* — Muncy, Geissler, Olds & Lowe, P.C.

(57) **ABSTRACT**

A defibrillator device is provided. The defibrillator device includes a first electrode, a second electrode, a readout module, a USB interface, a voltage converter and a stimulation module. When the first and second electrodes contact the chest of a patient, the readout module obtains a physiologic rhythm signal of the patient and provides a heart rhythm signal according to the first physiologic rhythm signal. According to a first voltage from a portable electronic device, the voltage converter generates a second voltage when the first USB interface is coupled to the portable electronic device, wherein the second voltage is larger than the first voltage. When the physiologic rhythm signal indicates that cardiac arrhythmia is present in the patient, the stimulation module provides an electric shock energy to the chest of the patient via the first and second electrodes according to the second voltage.

**6 Claims, 4 Drawing Sheets**

